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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/709,722	11/13/2000	Chiyoaki Iijima	107263	4658

25944 7590 09/02/2004

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EXAMINER	
NGUYEN, JENNIFER T	
ART UNIT	**PAPER NUMBER**
2674	17

DATE MAILED: 09/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/709,722	IIJIMA ET AL.	
	Examiner	Art Unit	
	Jennifer T Nguyen	2674	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-8 and 11-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3,6-8,11,17-24,26 and 27* is/are rejected.

7)☒ Claim(s) *4,5,12-16,25 and 27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office action is responsive to amendment filed on 03/10/2004.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 3, 11, 22, 23, 26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henzen (US Patent No.: 6,426,735) in view of Nakamura (US Patent No.: 4,417,785).

Regarding claims 3 and 11, referring to Figs. 1 and 2, Henzen teaches a liquid crystal panel driving method for a liquid crystal panel having a liquid crystal (2) between a pair of electrodes (i.e., selection electrode 5 and data electrode 6) in which optical characteristics of the liquid crystal are changed by applying a driving signal between the pair of electrodes, the liquid crystal panel driving method comprising: sensing a temperature (i.e., temperature sensor 9) of at least one of the liquid crystal panel and an environment in which the liquid crystal panel is disposed; and applying a low frequency signal as the driving signal in case that the sensed temperature is low, the low frequency signal having a frequency lower than a frequency (i.e., 100 Hz) of a driving signal used in case that the sensed temperature is normal (i.e., 25C), and varying a frequency of the driving signal discontinuously with respect to the sensed temperature (col. 2, lines 10-18, from col. 2, line 49 to col. 3, line 39).

Henzen differs from claims 3 and 11 in that he does not specifically teach a predetermined frequency. However, referring to Figs. 3 and 4, Nakamura teaches a predetermined frequency (fc) (col. 4, line 18 to col. 7, line 6). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the predetermined frequency as taught by Nakamura in the system of Henzen in order to provide a high contrast display device.

Regarding claim 22, Henzen further teaches an electronic apparatus (col. 1, lines 14-18).

Regarding claim 23, the combination of Henzen and Nakamura teaches each pixel being driven at a frequency not less than 0.256 kHz when the temperature is at +25 °C (Fig. 14, col. 9, lines 21-35 of Nakamura). The combination of Henzen and Nakamura does not specifically teach a frequency not less than 0.1 kHz when the temperature is at -20 °C. However, it would have been obvious to obtain a frequency not less than 0.1 kHz when the temperature is at -20 °C in order avoid flicker of the display.

Regarding claims 26 and 28, the combination of Henzen and Nakamura teaches varying the frequency of the driving signal including continuously varying the signal at frequencies higher than, and lower than and the frequency adaptation is not necessarily continuous or discontinuous at (col. 2, lines 10-18, from col. 2, line 49 to col. 3, line 39 of Henzen) predetermined frequency (fc) (col. 4, line 18 to col. 7, line 6 of Nakamura).

4. Claims 6-8, 17-20, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henzen (US Patent No.: 6,426,735) in view of Itoh (US Patent No.: 4,687,956).

Regarding claims 6 and 17, referring to Figs. 1 and 2, Henzen teaches a liquid crystal panel driving method for a liquid crystal panel having a liquid crystal (2) between a pair of

electrodes (i.e., selection electrode 5 and data electrode 6) in which optical characteristics of the liquid crystal are changed by applying a driving signal between the pair of electrodes, the liquid crystal panel driving method comprising: sensing a temperature (i.e., temperature sensor 9) of at least one of the liquid crystal panel and an environment in which the liquid crystal panel is disposed; and applying a low frequency signal as the driving signal in case that the sensed temperature is low, the low frequency signal having a frequency lower than a frequency (i.e., 100 Hz) of a driving signal used in case that the sensed temperature is normal (i.e., 25C) (col. 2, lines 10-18, from col. 2, line 49 to col. 3, line 39).

Henzen differs from claims 6 and 17 in that he does not specifically teach setting a driving frequency of each pixel of the liquid crystal panel so that, when the temperature is -20 °C, each pixel is driven at a frequency not greater than 1.28 kHz, and, when the temperature is +25 °C, each pixel is driven at a frequency not greater than 2.56 kHz. However, referring to Fig. 7, Itoh teaches when the temperature is -20 °C, each pixel is driven at a frequency < 20 Hz, and, when the temperature is +25 °C, each pixel is driven at a frequency <50 Hz (from col. 5, line 66 to col. 6, line 5). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the temperature and the frequency as taught by Itoh in the system of Henzen in order to provide a high quality image.

Regarding claims 7 and 18, the combination of Henzen and Itoh teaches setting the driving frequency of each pixel of the liquid crystal panel so that, when the temperature is +70 °C, each pixel is driven at a frequency not greater than 4.16 kHz (Fig. 7 of Itoh).

Regarding claim 8, referring to Figs. 1 and 2, Henzen teaches a liquid crystal panel

driving method for a liquid crystal panel having a liquid crystal (2) between a pair of electrodes (i.e., selection electrode 5 and data electrode 6) in which optical characteristics of the liquid crystal are changed by applying a driving signal between the pair of electrodes, the liquid crystal panel driving method comprising: sensing a temperature (i.e., temperature sensor 9) of at least one of the liquid crystal panel and an environment in which the liquid crystal panel is disposed; and applying a low frequency signal as the driving signal in case that the sensed temperature is low, the low frequency signal having a frequency lower than a frequency (i.e., 100 Hz) of a driving signal used in case that the sensed temperature is normal (i.e., 25C) (col. 2, lines 10-18, from col. 2, line 49 to col. 3, line 39).

Henzen differs from claim 8 in that he does not specifically teach setting a frame frequency to not greater than 40 Hz when the temperature is within a range including -20 °C, and setting the frame frequency in the range of 70 Hz to 90 Hz when the temperature is within a range including +25 °C. However, Itoh teaches a frame frequency to not greater than 40 Hz when the temperature is within a range including -20 °C, and setting the frame frequency in the range of 70 Hz to 90 Hz when the temperature is within a range including +25 °C (Fig. 7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the temperature and the frequency as taught by Itoh in the system of Henzen in order to provide a high quality image.

Regarding claim 19, referring to Figs. 1 and 2, Henzen teaches a liquid crystal panel driving method for a liquid crystal panel having a liquid crystal (2) between a pair of electrodes (i.e., selection electrode 5 and data electrode 6) in which optical characteristics of the liquid crystal are changed by applying a driving signal between the pair of electrodes, the liquid crystal

panel driving method comprising: sensing a temperature (i.e., temperature sensor 9) of at least one of the liquid crystal panel and an environment in which the liquid crystal panel is disposed; and applying a low frequency signal as the driving signal in case that the sensed temperature is low, the low frequency signal having a frequency lower than a frequency (i.e., 100 Hz) of a driving signal used in case that the sensed temperature is normal (i.e., 25C) (col. 2, lines 10-18, from col. 2, line 49 to col. 3, line 39).

Henzen differs from claim 19 in that he does not specifically teach setting the frame frequency to not greater than 40 Hz when the temperature is -20 °C, setting the frame frequency in the range of 70 Hz to 90 Hz when the temperature is +25 °C, and setting the frame frequency to not less than 130 Hz when the temperature is +70 °C. However, Itoh teaches setting the frame frequency to not greater than 40 Hz when the temperature is -20 °C, setting the frame frequency to not less than 130 Hz when the temperature is +70 °C (Fig. 7). Itoh does not specifically teach setting the frame frequency in the range of 70 Hz to 90 Hz when the temperature is +25 °C. However, it would have been obvious to obtain the frame frequency in the range of 70 Hz to 90 Hz when the temperature is +25 °C in order to provide a high quality image. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the temperature and the frequency as taught by Itoh in the system of Henzen in order to provide a high quality image.

Regarding claim 20, Henzen further teaches temperature compensating device is a synchronizing signal frequency varying device that varies a frequency of the driving signal by varying a frequency of a synchronizing signal applied to a liquid crystal drive control circuit for

controlling the driving circuit based on the sensed temperature (col. 2, lines 10-18, from col. 2, line 49 to col. 3, line 39).

Regarding claim 24, the combination of Henzen and Itoh teaches the frame frequency being set to not less than 130 Hz when the temperature is at +70 °C (Fig. 7 of Itoh).

5. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Henzen (US Patent No.: 6,426,735) in view of Itoh (US Patent No.: 4,687,956) and further in view of Mizutome et al. (US Patent No.: 6,037,920).

Regarding claim 21, the combination of Henzen and Itoh differs from claim 21 in that it does not specifically teach the temperature sensor being a thermistor formed together with the driving circuit in a semiconductor device. However, Mizutome teaches the temperature sensor being a thermistor formed together with the driving circuit in a semiconductor device (from col. 2, line 66 to col. 3, line 40). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the temperature sensor as taught by Mizutome in the system of the combination of Henzen and Itoh in order to provide a device with more space, light weight.

6. Claims 4, 5, 12-16, 25, and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Applicant's arguments with respect to claims 3-8 and 11-28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Jennifer T. Nguyen** whose telephone number is **703-305-3225.** The examiner can normally be reached on Mon-Fri from 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richard A Hjerpe** can be reach at **703-305-4709**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, DC. 20231

Or faxed to: 703-872-9306 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, sixth-floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is 703-306-0377.

JNguyen
08/27/2004

REGINA LIANG
PRIMARY EXAMINER